From: Bob Muglia
Sent: Tuesday, October 01, 1996 9:56 PM
To: Developer Tools Strategy; Peter Kukol; Patrick Dussud; Brad Lovering; David Stutz; Victor Stone; Ben Slivka; Adam Bosworth
Subject: FW: Think Week (Long!)

fyi...

bob

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GOVERNMENT EXHIBIT
983

From: Aaron Contorer
Sent: Monday, September 30, 1996 12:37 PM
To: Bob Muglia
Subject: FW: Think Week (Long!)

It is my understanding that this issue falls entirely under your group, but please let me know if there is any way I could help, or any people I should talk to to better understand this for Bill.

—Original Message—
From: Bill Gates
Sent: Monday 30 September 1996 11:25 AM
To: Aaron Contorer
Subject: FW: Think Week (Long!)

This scares the hell out of me.

Its still very unclear to me what our OS will offer to Java client applications code that will make them unique enough to preserve our market position.

Understanding this is so important that it deserves top priority.

—Original Message—
From: Adam Bosworth
Sent: Sunday, September 29, 1996 2:09 PM
To: Aaron Contorer
Cc: Bill Gates; Gary Burd; Brad Silverberg; John Ludwig; Ben Slivka; Bob Muglia
Subject: Think Week (Long!)

I think it is important to understand that Java is not just a language. If it were just a language, it would not be a threat to us. We would and could easily just build the best implementation of this language and be done. It is, however, much more. It is an alternative to COM. Now I realize that this is, even for me, a provocative statement. I'm going to try to back it up. First I'll use some examples and then discuss the issue in a slightly more wide-ranging fashion.

Examples:
When listening to the Denali folks explain to various Web-masters why it doesn't run on Unix, I hear the statement that COM isn't on Unix. Ignoring whether this is or isn't true, Java is on Unix and requires no dealing with setup, install, de-install, or anything else. Thus it is really easy to understand how a system for dynamically authoring Web pages on the server that depended upon Java objects rather than COM ones would have wider appeal. In Trident I'm asked how the local Dataset gets brought across the wire. I answer dataSource controls and can demo this. But, it assumes that some piece of code is permanently available on my machine to do ODBC. I'm asked why I don't just read the data over the wire using JDBC. I answer that I want to and will. Why? Because the JDBC class can be dynamically loaded, executed directly against the wire format coming over the same wire (Java is good at this, the right classes are there), and then discarded. No install. Nothing sitting in my registry file. Works on any platform. So the fact that JDBC can be loaded across the wire essentially makes it a wire level protocol as far as I'm concerned in as much as I never need to keep custom code on my machine that talks to a specific wire protocol. Next, let's consider authoring a calender control. Up to now I've been telling folks that COM works here and Applet's don't because I want to be able in Trident to sink the events of the control like DateChanged fired when the user clicks on the control and COM provides an architecture both for me sinking the events and for a RAD tool discovering what these events are and Applet's don't. This isn't true anymore. With LiveConnect I can simply pass in a script function in my page as a paramteter of the Applet and the Applet can fire it. Or with JavaBeans, I can easily write one extra property in the Applet (EventSink) set my one new method SetHandleEvents, and then when I want to fire the event I just write a single line of code this.EventSink->DateChanged(NewDate). (The syntax may be slightly off). To implement the same think in our OLE Controls, I must allocate a conection point container, add a connection point, add a pointer to the sink to the connection point, marshall the arguments into the form that the Invoke method of the IDispatch interface expects, and then fire it. This is actually quite a lot of hard code which provides no runtime benefit in real life. Thus it is a lot harder and bigger to write than

the Java equivalent. Sure we could use the same architecture from C++, but that's the point. This is an architecture, not just a language. Another example. We were told that it would be easy to write controls in Java. It was just a language. Well, considering the importance to us, I'd assume if it were easy we'd be doing it by now. But as of this writing, there isn't even clear agreement about how you will write such a thing because the Java folks are afraid/embarrased to expose the raw plumbing to the Java programmer because it is so much harder than the Borland Javabeans alternatives. So right now we have nothing. I literally cannot write today a calendar control in Java that will fire events to my script in Trident. Netscape is shipping today a browser that can. This cannot stand and, if it does, obviously I'll be forced to support LiveConnect with great speed in Trident because the alternative would be that Netscape would interact better with Java Components than I do.

General Issue:
A key general issue that Gary Burd is better equipped to explain than I am is that Java has a competitive advantage in simplicity of implementation precisely because the architecture isn't language neutral. They have brilliantly used the language to solve problems where we must (in C++) write lots of explicit code to do what essentially amounts to runtime plumbing and this code is hard to write and hard to understand. This shows up in every facet of the language. Indeed, the way to sink events in AWT is still simpler. You subclass the appropriate method of the object. Period. No wiring. JavaBeans has taken this to a new level by adding equivalents to our TypeInfos and our EventBinding ConnectionPoints that are lightyears simpler to implement and will almost certainly run a lot faster because they are essentially not overhead. All of these benefit from the fact that the objects can be dynamically loaded and don't require install/setup and you have only to look at Office to understand what a total nightmare Setup is for us at this point. This single fact, dynamic loading without setup/install/registration conflicts is alone a major asset for Java. The next issue is the classes. Java people have a zeitgeist which mandates that widgets built in Java run anywhere. This may limit them (no direct draw), but at the end of the day they do have access to a bitplane in AWT and many of them have simply written all their controls at that level bypassing all the slowness and inneficiency of the rest of AWT and using the bitplane as a universal portable layer. This works. This is what BOngo from Marimba and the forms that NetScape bought from a spin-off of the Nextstep folks and others are doing. At the same time, AWT 1.1 is about to come out and it is, by all accounts, a lot faster and better than AWT 1.0. We cannot fight this with complex classes that only work on Windows 32 bit platforms alone. We must also be the best provider of these AWT classes and the ones who then quietly offer "extensions" that do realize either the power of Windows (DirectDraw) or of Trident, but in ways that seduce rather than collide. We must acknowledge that Java competes with COM in order to understand what to do about it, not just put our heads in the sand. And we must actually go the last step and make certain that it is really easy to build dynamic extensions to our frameworks whether they are Denali or Trident using Java even if that means doing it differently than we would for C++. This doesn't mean just making it easy to put Java behind a Trident Page to construct a component as Bobmu is planning with Trics. It means also making it easy to build components in Java that either have nothing to do with Trident (they extend Denali) or just extend Trident but don't reuse it like DataSourceControls or sliders or ChartControls or animatedart.

Concerned
Adam Bosworth

From: Aaron Contorer
Sent: Friday, September 27, 1996 12:55 PM
To: Adam Bosworth
Subject: re: memos you are writing

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Best is to email them to both me and Bill.

If in time, I will include paper printout in to-read stack, which increases probability Bill will get to them promptly. But even if not in time, Bill says he's quite interested so I'm not worried that he won't read them soon.

I apologize for the quite short notice for this Think Week. I know you are super busy.

-Aaron

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Subject: RE: A new text idea...

Based on the discussions we had with the Trident guys on Wednesday (of David and Alex were present at those meetings), the impression that I got from the Trident32 team was that they are very open to doing what NIA needs. We discussed how multiple views can be implemented, and we briefly touched on the topic of common Text services for other components like charts, etc.. We agreed to meet again and discuss further. Of course it was not clear yet whether NIA can do all the things it wants to do using Trident32, and exactly for that reason we are going to meet with them few more times. I have scheduled a meeting from 12:15 to 1:45PM tomorrow to discuss this stuff.

In today's review with Brad, he made it very very clear that NIA should be the number 1 driving client of Trident, and of course he wants only one Trident effort.

So I think, we should make every effort to figure out how NIA can be built using Trident32 and what needs to be added to Trident32 to make it happen. In that process if we hit road block, then of course we have to consider other options.

Jon: I think things will move much faster, and also the discussions with Trident32 folks will get more focused on making NIA work, if Brad sends mail to them telling exactly what he told us.

-- Srini

----Original Message----
From: **David Bangs**
Sent: Thursday, May 22, 1997 9:33 PM
To: Srini Koppolu; Richard Wolf
Cc: Alex Mogilevsky; David Bangs; Jon DeVaan
Subject: A new text idea...
Importance: High

Alex and I are frustrated by the current "Text" options available for NIA.
Trident in Java has the disadvantage of being in Java, being too agressive, and lacking the support of management. BillG, etc. only want one Trident.
Trident32 is monolithic, and aren't willing to do enough architecture work necessary to support NIA. (NIA may be able to be cobbled on top of Trident 2, but remember - this is the future of Office and architecture is very important.)
Unfortunately, we're being asked to choose in a rush so we can have a coherent plan for the BillG review on 5/30.

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Here's a plan AlexMog and I came up with that might be nice.
Trident 2 goes forward as planned by Christian, exposing its "editor helper" component that helps manipulate the tree for common operations like "toggle bold", "indent", and "paste." With the help of a Quill developer (KeithCu) - they take Line Services and start adding cool stuff like kerning - that will help make HTML a richer canvas to author to.

In addition, we ask Trident to expose its backing store (tree structure, etc.) to the degree that someone could build an alternative view on top. This means there is a rich eventing model that helps that view know what text to update.

NIA uses Trident's regular view in "Web View" but creates its own piece called "DocView" to implement its other views.
DocView is based on Quill stuff and code stolen from Trident and Office. It provides the "WebText" editing services so text can be flexible edited anywhere.
It relies on Trident for HTML parsing, scripting, Java VM support, persistence, etc. It only has to view.
It doesn't have to reach total Netscape compat in NIA 1 - but does have to be compat for anything NIA create, and a nice cross-section of other stuff.

It **should** eventually reach IE 5 compat so it can become the standard viewer for IE 6. Once it does, we will have achieved a world where anything NIA can author can be browsed.
(If IE would never take all of DocView, at least they could take the WebText part for text

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compat.)

Benefits:
NIA could use the WebText services for any text editing anywhere.
Trident would become more componentized without the risk of taking WebText for IE6.
NIA could be fully implemented in C++.

Cross-Platform: Once our view and the browsers' view are the same - it will get ported to all the platforms that support our browser. We should share a common cross-platform strategy as Trident - which should involve an abstraction layer. Quill currently has an abstraction layer.

Does this seem interesting to you? Can we talk about whether this makes sense for NIA?
If this makes sense, perhaps I can mention this alternative as part of the Trident BillG review.

--David

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